

WHAT IS CLAIMED IS:

1. A cardiac reinforcement device, said device comprising:

- a biomedical material which can be applied to the epicardial surface of the heart and which expands to a predetermined size, said predetermined size selected to constrain cardiac expansion beyond a predetermined limit.

2. The cardiac reinforcement device according to claim 1 wherein said biomedical material is an open mesh patch, said size selected for said patch to locally constrain cardiac expansion.

3. The cardiac reinforcement device according to claim 1 wherein said biomedical material is a jacket with said predetermined size selected for said jacket to surround the epicardial surface of the heart and circumferentially constrain cardiac expansion.

4. The cardiac reinforcement device according to claim 3 wherein said jacket has a base end, said base end having an opening for applying said jacket to the epicardial surface of the heart by passing the jacket over the epicardial surface of the heart such that when applied to said epicardial surface, said base end of said jacket is oriented toward the base of the heart.

5. The cardiac reinforcement device according to claim 3 wherein said jacket has an apex end such that when said jacket is applied to said epicardial surface, said apex end is oriented towards the apex of the heart.

6. The cardiac reinforcement device according to claim 5 wherein said apex end of said jacket has an opening for protrusion of the apex of the heart therethrough.

7. The cardiac reinforcement device according to claim 4 wherein said base end of said jacket further includes a securing arrangement for securing said jacket to said epicardial surface of the heart.

8. The cardiac reinforcement device of claim 7 wherein said securing arrangement for securing said jacket to said epicardial surface of the heart is a circumferential attachment device which surrounds said opening at said base end of said jacket.

9. The cardiac reinforcement device according to claim 4 wherein said jacket includes a mechanism for selectively adjusting said predetermined size of said jacket surrounding the epicardial surface of the heart.

10. The cardiac reinforcement device according to claim 9 wherein said mechanism for selectively adjusting said predetermined size of said jacket is a slot, said slot having opposing lateral edges which decrease said

predetermined size by moving said opposing lateral edges closer together.

11. The cardiac reinforcement device according to claim 10 including a lateral attachment device for fastening together said lateral opposing edges of said slot.

12. The cardiac reinforcement device according to claim 9 wherein said mechanism for selectively adjusting said predetermined size of said jacket is an inflatable member mounted between said jacket and the epicardial surface.

13. The cardiac reinforcement device according to claim 1 wherein said biomedical material is an open mesh material.

14. The cardiac reinforcement device according to claim 1 wherein said biomedical material is a polyester mesh.

15. The cardiac reinforcement device according to claim 1 wherein said biomedical material is silicon rubber.

16. The cardiac reinforcement device according to claim 1 wherein said biomedical material includes a radiopaque marker.

17. The cardiac reinforcement device according to claim 16 wherein said radiopaque marker is a platinum wire.

18. A method for treating cardiac disease, said method comprising:

(a) selecting a cardiac reinforcement device, said cardiac reinforcement device comprising:

(i) a biomedical material which can be applied to the epicardial surface of the heart and which expands to a predetermined size, said predetermined size selected to constrain cardiac expansion beyond a predetermined limit;

(b) applying said cardiac reinforcement device to the epicardial surface of the heart; and

(c) securing said cardiac reinforcement device to said epicardial surface of the heart.

19. The method according to claim 18 wherein said cardiac reinforcement device is a jacket with said predetermined size selected for said jacket to surround the epicardial surface of the heart and circumferentially constrain cardiac expansion.

20. The method according to claim 18 wherein said cardiac reinforcement device is a patch, said size selected for said patch to locally constrain said cardiac expansion.

21. The method according to claim 18 wherein said cardiac reinforcement device is applied to the epicardial surface of the heart under the parietal layer of the pericardium.

22. The method according to claim 18 wherein said cardiac reinforcement device is applied to the epicardial surface of the heart over the parietal layer of the pericardium.

23. The method according to claim 19 wherein said cardiac reinforcement device is applied to said epicardial surface via thorascopy.

24. The method according to claim 18 wherein said cardiac disease is heart failure.

25. The method according to claim 18 wherein said cardiac disease is cardiomyopathy.

26. The method according to claim 19 wherein said predetermined size of said jacket is reduced as cardiac size is reduced.

27. A method for reducing the diastolic volume of the heart, said method comprising:

(a) selecting a cardiac reinforcement device, said cardiac reinforcement device comprising:

(i) a biomedical material which can be applied to the epicardial surface of the heart and which expands to a predetermined size, said predetermined size selected to constrain cardiac expansion beyond a predetermined limit;

(b) applying said cardiac reinforcement device to the epicardial surface of the heart; and

(c) securing said cardiac reinforcement device to said epicardial surface of the heart.